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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/772,883	01/31/2001	Seiji Fujiwara	33216M067	2064

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EXAMINER
SHINGLETON, MICHAEL B

ART UNIT	PAPER NUMBER
2817	

DATE MAILED: 04/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)
09-772883	Fujiwara et al.
Examiner	**Group Art Unit**
SHINGLETON	2817

—Th MAILING DATE of this communication appears on the cover sheet beneath th correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE Three MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

☒ Responsive to communication(s) filed on 2-6-2003.

☒ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 1 1; 453 O.G. 213.

Disposition of Claims

☒ Claim(s) 1-14 are pending in the application.

Of the above claim(s) 4, 5 + 8 is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1, 2, 3, 6, 7, 9-11 and 12-14 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claim(s) _____ are subject to restriction or election requirement

Application Papers

☒ The proposed drawing correction, filed on 2-6-2003 is ☒ approved by the examiner ☐ disapproved.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Pri rity under 35 U.S.C. § 119 (a)-(d)

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).

☐ All ☐ Some* ☐ None of the:

☐ Certified copies of the priority documents have been received.

☐ Certified copies of the priority documents have been received in Application No. _____.

☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____.

Attachment(s)

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☒ Notice of Ref rence(s) Cited, PTO-892

☐ Notice of Draftsperson's Patent Drawing Revi w, PTO-948

☐ Interview Summary, PTO-413

☐ Notice of Informal Patent Application, PTO-152

☐ Other _____

Office Action Summary

DETAILED ACTION

The disclosure is objected to because of the following informalities: The second to last line in claim 1 should read "at least one higher harmonic" instead of "at lest one higher harmonic".

Appropriate correction is required.

The abstract of the disclosure is objected to because the abstract should be limited to a single paragraph. Correction is required. See MPEP § 608.01(b).

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the dual amplifier embodiment that combines the amplifier structure with a gate and an amplifier structure with a base (claim 11) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered. Note that claim 11 is dependent upon claim 10.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1, 2, 3, 6, 7, 9 and 12 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Miguelez et al. 6,107,877 (Miguelez).

Figures 6 and 7 of Miguelez discloses a predistortion circuit 100 having an input terminal (Either of the nodes of the capacitor 102) for inputting a predetermined signal 101, a non-linear device i.e. diode 109 directly or indirectly connected to the input terminal, a bias supply circuit (See Figure 7) that applies a voltage to the non-linear device (Also see column 9, lines 17 and 18) and a "specific" frequency suppressing means i.e. capacitor 111 connected to one side or both sides of the non-linear device 109 directly without another intervening device and of suppressing all or part of such frequencies that are from a frequency corresponding to DC to a frequency corresponding to an occupied bandwidth of an input signal inputted to the input terminal and/or suppressing at least one higher harmonic frequency of a carrier wave of the input signal. Figure 6 of Miguelez also clearly shows an output terminal that is either

of the nodes of the capacitor 113. Figure 6 of Miguelez clearly shows the non-linear device provided between the connection point between the input terminal and the output terminal, and ground. Note the abstract of Miguelez that clearly recites connecting this preamplifier to an RF amplifier that is a "power amplifier". As it relates to newly presented claim 12, the circuit elements that compose the specific-frequency suppressing means are lumped parameter elements (Note the use of surface mount components recited in column 10 lines 4 and 41.)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 10, 11, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miguelez et al. 6,107,877 (Miguelez) in view of Yun et al. 5,914,641 (Yun) and Fukuden 5,805,023 (Fukuden).

Figures 6 and 7 of Miguelez discloses a predistortion circuit 100 having an input terminal (Either of the nodes of the capacitor 102) for inputting a predetermined signal 101, a non-linear device i.e. diode 109 directly or indirectly connected to the input terminal, a bias supply circuit (See Figure 7) that applies a voltage to the non-linear device (Also see column 9, lines 17 and 18) and a "specific" frequency suppressing means i.e. capacitor 111 connected to one side or both sides of the non-linear device 109 directly without another intervening device and of suppressing all or part of such frequencies that are from a frequency corresponding to DC to a frequency corresponding to an occupied bandwidth of an input signal inputted to the input terminal and/or suppressing at least one higher harmonic frequency of a carrier wave of the input signal. Figure 6 of Miguelez also clearly shows an output terminal that is either of the nodes of the capacitor 113. Figure 6 of Miguelez clearly shows the non-linear device provided between the connection point between the input terminal and the output terminal, and ground. Note the abstract of Miguelez that clearly recites connecting this preamplifier to an RF amplifier that is a "power amplifier".

Figure 12 of the Fukuden reference discloses the same amplifier circuit as claimed except that the bias networks are not shown. Note that elements like 21, 21', 22, 22' of Fukuden meet the claimed

limitations to the frequency suppressing means like that shown as elements 1307 and 1309 in the disclosed invention. The amplifier structure of Fukuden is a conventional art recognized equivalent amplifier structure. Accordingly, it would have been obvious to one of ordinary skill in the art at the time of the invention to have added the amplifier of Fukuden for the amplifier of Miguelez because, as the Miguelez is silent on the exact structure of the amplifier, any art recognized equivalent amplifier circuit would have been useable therewith such as the conventional amplifier of Fukuden.

Yun discloses the conventional use of bias(supply) means VDD and VGG to supply the necessary biases to properly bias the transistor to the active region and accordingly to operate the transistor in the proper operation class.

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the conventional bias supply means like that of Yun in Miguelez in combination with Fukuden so as to properly bias the transistor to the active region and accordingly to operate the transistor in the proper operation class as taught by Yun.

For examining purposes the amplifier of claim 11 is seen as being a single amplifier combined with the predistorter circuit instead of the two-amplifier arrangement as claimed. In this case the Fukuden reference discloses the same amplifier circuit as claimed except that the bias networks are not shown and the amplifying element is shown as a MOS device instead of a bipolar device. Note that elements like 21, 21', 22, 22' of Fukuken meet the claimed limitations to the frequency suppressing means like that shown as elements 1307 and 1309 in the disclosed invention. The amplifier structure of Fukuden is a conventional art recognized equivalent amplifier structure. Accordingly, it would have been obvious to one of ordinary skill in the art at the time of the invention to have added the amplifier of Fukuden for the amplifier of Miguelez because, as the Miguelez is silent on the exact structure of the amplifier, any art recognized equivalent amplifier circuit would have been useable therewith such as the conventional amplifier of Fukuken.

Yun discloses the conventional use of bias(supply) means VDD and VGG to supply the necessary biases to properly bias the transistor to the active region and accordingly to operate the transistor in the proper operation class.

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the conventional bias supply means like that of Yun in Miguelez in combination with Fukuden so as to properly bias the transistor to the active region and accordingly to operate the transistor in the proper operation class as taught by Yun.

As to the use of a bipolar as compared to a MOS such transistors are well known to be art recognized equivalents and accordingly the substitution of one for the would have been obvious to one of ordinary skill in the art at the time the invention was made.

With respect to claims 13 and 14, Miguelez recites that the specific-frequency suppressing means is composed of the generic elements namely a capacitor and a resistor. Claims 13 and 14 recite the use of a transmission line as one of the discrete components and a capacitor as one of the components.

One of ordinary skill in the art would have known that surface mounted, or exterior mounted transmission lines are conventional structures used for providing an impedance drop i.e. resistance.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have substituted conventional transmission line structures in place of the generic resistive devices of Miguelez because, as the reference is silent as to the exact structure of the resistive element, any art-recognized resistive element would have been usable such as the well-known conventional transmission line.

Response to Arguments

Applicant's arguments filed 2-6-2003 have been fully considered but they are not persuasive.

Applicant argues that the Miguelez reference does not have the "specific-frequency suppressing means is defined as **suppressing** all or part of the frequencies that are (in a range) from a frequency corresponding to DC, to a frequency corresponding to an occupied bandwidth of an input signal inputted to the input terminal and/**or suppressing** at least one higher harmonic frequency of a carrier wave of the input signal (emphasis added)." The examiner respectfully disagrees. The examiner agrees that the above alternative expression recites a range, but the alternative of the alternative expression recites "suppressing at least one higher harmonic frequency of a carrier wave of the input signal". Note the verb "suppressing". This claim language is very broad in that it does not specify what harmonic, just that it is a higher harmonic is defined as suppressing. Higher harmonics can go to infinity (See page 145 of Horn), and the capacitor 11 of Miguelez forms a low pass filter arrangement (See page 79 of Horn). There is a frequency point above which the filter of Miguelez will no longer allow the signal to pass. Thus, there must be a higher harmonic frequency that the arrangement of Miguelez suppresses and in fact there is a whole range of harmonic frequencies that Miguelez will suppress. Note that the specific-frequency suppressing means can be just a capacitor (Note claim 6) and thus the means of Miguelez is clearly an equivalent to the means as meant by applicant. Applicant also mentions claim 2 that discusses the impedance of the means. Clearly, when the suppressing means of Miguelez is suppressing the higher harmonic the impedance is much lower for the low pass filter formed therein as it passes the AC signal to ground (See page 79 of Horn). Applicant presents in part the same arguments in response to the 35 USC 103 rejection and accordingly are found non-persuasive for the same reasons above.

Applicant believes that the examiner has misinterpreted claim 11 as having dual amplifiers. Applicant refers to new Figures 12a and 12b. However, claim 11 is still dependent on claim 10 and thus there are still two amplifiers that make up the scope of claim 11.

Applicant also believes that there is no motivation to combine the teachings of the cited art in any way that would render the claimed invention obvious. The examiner respectfully disagrees and refers applicant to the above rejection for the stated motivations.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael B. Shingleton whose telephone number is 703-308-4903. The examiner can normally be reached on Mon-Thurs from 8:30 to 4:30. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal, can be reached on (703) 308-4909. The fax phone number for the organization where this application or proceeding is assigned is 703-308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

MBS
October 31, 2002
April 18, 2003

Michael B. Shingleton
MICHAEL B. SHINGLETON
PRIMARY EXAMINER
ART UNIT 2817